



## Outdoor Operational Stability of Indium-Free Flexible Polymer Solar Modules Over 1 Year Studied in India, Holland, and Denmark

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# Outdoor Operational Stability of Indium-free Polymer Solar Cell Modules Investigated over 1 year

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# In Summary



- Low-cost encapsulation method is demonstrated.
- The method is roll-to-roll compatible.
- Decay in photovoltaic is due to localized defects
  - the edge cross, contacts, and uneven adhesive thickness →  $O_2$  and  $H_2O$  infiltration
  - results in PEDOT:PSS degradation/delamination
  - Photooxidation of photoactive polymer → not the main cause of degradation
- Simple design changes → performance is dramatically enhanced ( $MPP_{t=0}$  equal  $MPP_{t=1 \text{ year}}$ )
  - Defects due to edges and uneven adhesive thickness is eliminated
  - Defects due to contacting method persist

Hösel, M., Søndergaard, R. R., Jørgensen, M. and Krebs, F. C. (2013), *Adv. Eng. Mater.*, 15: 1068–1075.

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